Please provide the following information, and submit to the NOAA DM Plan Repository.

Reference to Master DM Plan (if applicable)

As stated in Section IV, Requirement 1.3, DM Plans may be hierarchical. If this DM Plan inherits provisions from a higher-level DM Plan already submitted to the Repository, then this more-specific Plan only needs to provide information that differs from what was provided in the Master DM Plan.

URL of higher-level DM Plan (if any) as submitted to DM Plan Repository:

1. General Description of Data to be Managed

1.1. Name of the Data, data collection Project, or data-producing Program:
Benthic Cover

1.2. Summary description of the data:
Benthic cover (habitat) maps are derived from aerial imagery, underwater photos, acoustic surveys, and data gathered from sediment samples. Shallow to moderate-depth benthic habitat information assists ecosystem-based marine resource management. Many habitats, including hard and soft corals, are home to a diversity of marine organisms, which provide many important ecosystem services, including fishing, tourism, water quality enhancement, and shoreline protection. Coral reef ecosystems and associated bottom types are under increasing pressure from environmental and anthropogenic stressors. Mitigating these threats requires analyzing their spatial distribution, making benthic habitat mapping a key component to the conservation and management activities of state and federal agencies.

1.3. Is this a one-time data collection, or an ongoing series of measurements?
One-time data collection

1.4. Actual or planned temporal coverage of the data:
2017-04

1.5. Actual or planned geographic coverage of the data:
W: -178.384928, E: 171.387439, N: 28.460447, S: -14.56106

1.6. Type(s) of data:
(e.g., digital numeric data, imagery, photographs, video, audio, database, tabular data, etc.)

1.7. Data collection method(s):
(e.g., satellite, airplane, unmanned aerial system, radar, weather station, moored buoy, research vessel, autonomous underwater vehicle, animal tagging, manual surveys, enforcement activities, numerical model, etc.)

1.8. If data are from a NOAA Observing System of Record, indicate name of system:

1.8.1. If data are from another observing system, please specify:

2. Point of Contact for this Data Management Plan (author or maintainer)

2.1. Name:
NOAA Office for Coastal Management (NOAA/OCM)

2.2. Title:
Metadata Contact

2.3. Affiliation or facility:
NOAA Office for Coastal Management (NOAA/OCM)

2.4. E-mail address:
coastal.info@noaa.gov

2.5. Phone number:
(843) 740-1202

3. Responsible Party for Data Management
Program Managers, or their designee, shall be responsible for assuring the proper management of the data produced by their Program. Please indicate the responsible party below.

3.1. Name:

3.2. Title:
Data Steward

4. Resources
Programs must identify resources within their own budget for managing the data they produce.

4.1. Have resources for management of these data been identified?

4.2. Approximate percentage of the budget for these data devoted to data management (specify percentage or "unknown"):

5. Data Lineage and Quality
NOAA has issued Information Quality Guidelines for ensuring and maximizing the quality, objectivity, utility, and integrity of information which it disseminates.

5.1. Processing workflow of the data from collection or acquisition to making it publicly accessible
(describe or provide URL of description):
Process Steps:

- 2013-01-01 00:00:00 - 1. Starting with Puerto Rico and the US Virgin Islands, download and unzip: (Jobos Bay data was received via email from laurie.bauer@noaa.gov) http://coastalscience.noaa.gov/datasets/e92/SWPR_Benthic_Habitats.zip http://coastalscience.noaa.gov/datasets/e93/benthic_habitat_maps.zip http://coastalscience.noaa.gov/datasets/e94/data/StJohn_ShallowWater_Habitat_Map.zip http://coastalscience.noaa.gov/datasets/e94/data/StJohn_ModerateDepth_Habitat_Map.zip http://coastalscience.noaa.gov/datasets/e95/data/shapefiles/p_rico.zip http://coastalscience.noaa.gov/datasets/e95/data/shapefiles/stsj_fin.zip http://coastalscience.noaa.gov/datasets/e95/data/shapefiles/stc_fin.zip https://nccospublicstor.blob.core.windows.net/projects-attachments/76/ViequesBenthicHabitats.zip https://nccospublicstor.blob.core.windows.net/projects-attachments/258/NEPR_HabitatMap_2015.zip https://nccospublicstor.blob.core.windows.net/projects-attachments/171/Habitat_Maps.zip 2. Reproject all to NAD 83 into a new file geodatabase 3. Merge Puerto Rico, St. Thomas/St. John and St. Croix into a single feature class 4. Simplify and condense attributes 5. Dissolve the feature class checking all fields except Object ID, Polygon ID, ID, Area, Perimeter, Shape_Length and Shape_Area, with no multi-part polygons 6. Merge SouthWest Puerto Rico, Jobos Bay, Vieques, St. John Shallow, St. John Moderate, Buck Island Shallow, Buck Island Moderate, and Buck Island Deep into a single feature class 7. Simplify and condense attributes 8. Dissolve the feature class checking all fields except Object ID, Polygon ID, ID, Area, Perimeter, Shape_Length and Shape_Area, with no multi-part polygons 9. Select all features with the Zone value as Unknown and switch selection 10. Export these selected features as a new feature class 11. Open the feature class representing the area covering Fish Bay, Coral Bay, and St. Thomas East End Reserve and select all features with the Zone value as Unknown and switch selection 12. Export these selected features as a new feature class 13. Erase the area from the SouthWest Puerto Rico, Jobos Bay, Vieques, St. John and Buck Island feature class using the feature class representing the area covering Fish Bay, Coral Bay, and St. Thomas East End Reserve 14. Merge the new feature class with the feature class representing the area covering Fish Bay, Coral Bay, and St. Thomas East End Reserve into a single feature class 15. Simplify and condense attributes 16. Dissolve the feature class checking all fields except Object ID, Polygon ID, ID, Area, Perimeter, Shape_Length and Shape_Area, with no multi-part polygons 17. Erase the area from the Puerto Rico, St. Thomas/St. John and St. Croix feature class using the feature class representing the area covering SouthWest Puerto Rico, Jobos Bay, Vieques, St. John Buck Island, Fish Bay, Coral Bay, and St. Thomas East End Reserve 18. Merge the new feature class with the feature class representing the area covering SouthWest Puerto Rico, Jobos Bay, Vieques, St. John Buck Island, Fish Bay, Coral Bay, and St. Thomas East End Reserve into a single feature class 19. Simplify and condense attributes 20. Dissolve the feature class checking all fields except Object ID, Polygon ID, ID, Area, Perimeter, Shape_Length and Shape_Area, with no multi-part polygons 21. For South Florida, download the following zip files and unzip: http://atoll.floridamarine.org/data/Zips/SDE/benthic_south_fl_poly.zip 22. Reproject all shapefiles to NAD 83 into a new file geodatabase 23. Dissolve the

feature class checking all fields except Object ID, Polygon ID, ID, Area, Perimeter, Shape_Length and Shape_Area, with no multi-part polygons
- 2013-01-01 00:00:00 - *Continuation of 2013 Processing Steps:* 24. Moving on to the Hawaiian Islands, download the following zip files and unzip: http://coastalscience.noaa.gov/datasets/e97/2007/shapes_benthic/Habitat_GIS_Data.zip 25. Reproject all shapefiles to NAD 83 into a new file geodatabase 26. Merge Niihau, Oahu, Hawaii, Kahoolawe, Kauai, Lanai, Maui and Molokai into a single feature class 27. Simplify and condense attributes 28. Dissolve the feature class checking all fields except Object ID, Polygon ID, ID, Area, Perimeter, Shape_Length and Shape_Area, with no multi-part polygons 29. For the NorthWest Hawaiian Islands, download the following zip files and unzip: http://coastalscience.noaa.gov/datasets/e98/data/frenchfrigate_class_4m.zip http://coastalscience.noaa.gov/datasets/e98/data/kure_class_4m.zip http://coastalscience.noaa.gov/datasets/e98/data/laysan_class_4m.zip http://coastalscience.noaa.gov/datasets/e98/data/lisianski_class_4m.zip http://coastalscience.noaa.gov/datasets/e98/data/maro_class_4m.zip http://coastalscience.noaa.gov/datasets/e98/data/midway_class_4m.zip http://coastalscience.noaa.gov/datasets/e98/data/necker_class.zip http://coastalscience.noaa.gov/datasets/e98/data/nihoa_class_4m.zip http://coastalscience.noaa.gov/datasets/e98/data/pearlhermes_class_4m.zip 30. Import images into a new file geodatabase 31. Use the Boundary Clean tool to simplify the rasters using the No Sort technique and running expansion and shrinking twice 32. Convert the rasters to polygons 33. Reproject the new polygons to NAD 83 34. Merge Nihoa, Necker, FrenchFrigate, Maro, Laysan, Lisianski, PearlHermes, Midway and Kure into a single feature class 35. Simplify and condense attributes 36. Dissolve the feature class checking all fields except Object ID, Polygon ID, ID, Area, Perimeter, Shape_Length and Shape_Area, with no multi-part polygons 37. Create a table with the data found at http://coastalscience.noaa.gov/datasets/e98/docs/habitat_class_DN.txt 38. Join this table to the NorthWest Hawaiian Islands feature class and export into a new feature class
- 2013-01-01 00:00:00 - *Continuation of 2013 Processing Steps:* 39. For American Samoa, Guam and the Northern Mariana Islands, download the following zip files and unzip: https://products.coastalscience.noaa.gov/collections/benthic/e99us_pac/data_guam.aspx https://products.coastalscience.noaa.gov/collections/benthic/e99us_pac/data_as.aspx https://products.coastalscience.noaa.gov/collections/benthic/e99us_pac/data_cnmi.aspx 40. Reproject all shapefiles to NAD 83 into a new file geodatabase 41. Merge Tutulia, Manua Islands, Rose Atoll and Swains Island into a single feature class 42. Simplify and condense attributes 43. Dissolve the feature class checking all fields except Object ID, Polygon ID, ID, Area, Perimeter, Shape_Length and Shape_Area, with no multi-part polygons 44. Merge Guam, Rota, Aguijan, Tinian, Saipan, Farallon de Medinilla, Anatahan, Sarigan, Guguan, Alamagan, Pagan, Agrihan, Asuncion Island, Maug Islands and Farallon de Pajaros into a single feature class 45. Simplify and condense attributes 46. Dissolve the feature class checking all fields except Object ID, Polygon ID, ID, Area, Perimeter, Shape_Length and Shape_Area, with no multi-part polygons 47. Go through all each shapefile and update the data in attribute fields (crosswalk) to match the data to the

CMECS database (https://www.fgdc.gov/standards/projects/FGDC-standards-projects/cmecs-folder/CMECS_Version_06-2012_FINAL.pdf), using the schema in table 7. Some fields may need to be changed as their description does not match what is reflected in CMECS. Examples are those with 'Structure' in ("Linear Reef", " Macroalgae", "Mangrove", "Seagrass") and/or 'Cover' in ("Mangrove", "Reef", "Reef Hole", "Salt Pond"). These descriptions can be captured in the appropriate fields. 48. Merge then dissolve all layers into a single feature class including all fields except Object ID, Shape_Length and Shape_Area, again with no multi-part polygons. If the location field has not been created, this can now be done and calculated according to the source data. 49. Run the Integrate tool on the feature class to ensure no gaps in the data. 50. Now select, export and reproject the features into their respective UTM zones. These should include 01N, 02N, 02S, 03N, 04N, 05N, 17N, 19N, 20N and 55N 51. Add the acres field and calculate acres in each feaure class. 52. Reproject all features back into WGS 1984 Auxiliary Sphere and merge back into a single layer 53. Delete all superfluous fields and check geometry
- 2017-03-01 00:00:00 - **2017-March Update** + For Majuro, Palau, Palmyra and Northeast Puerto Rico and Culebra Island, download the following zip files and unzip: https://products.coastalscience.noaa.gov/collections/benthic/e99us_pac/data_guam.aspx https://products.coastalscience.noaa.gov/collections/benthic/e99us_pac/data_as.aspx https://products.coastalscience.noaa.gov/collections/benthic/e99us_pac/data_cnmi.aspx https://nccospublicstor.blob.core.windows.net/projects-attachments/258/NEPR_HabitatMap_2015.zip + Go through all each shapefile and update the data in attribute fields (crosswalk) to match the data to the CMECS database (https://www.fgdc.gov/standards/projects/FGDC-standards-projects/cmecs-folder/CMECS_Version_06-2012_FINAL.pdf), using the schema in table 7. Some fields may need to be changed as their description does not match what is reflected in CMECS. Examples are those with 'Structure' in ("Linear Reef", "Macroalgae", " Mangrove", "Seagrass") and/or 'Cover' in ("Mangrove", "Reef", "Reef Hole", "Salt Pond"). These descriptions can be captured in the appropriate fields. + Merge then dissolve all layers into a single feature class including all fields except Object ID, Shape_Length and Shape_Area, again with no multi-part polygons. If the location field has not been created, this can now be done and calculated according to the source data. + Run the Integrate tool on the feature class to ensure no gaps in the data. + Add acres field using double. + Now select each location and change the data frame to their respective UTM zones. These should include 03N, 20N, 53N and 59N and calculate acres + Reproject all features back into WGS 1984 Auxiliary Sphere and merge back into original data + Delete all superfluous fields and check geometry

5.1.1. If data at different stages of the workflow, or products derived from these data, are subject to a separate data management plan, provide reference to other plan:

5.2. Quality control procedures employed (describe or provide URL of description):

6. Data Documentation

The EDMC Data Documentation Procedural Directive requires that NOAA data be well documented, specifies the use of ISO 19115 and related standards for documentation of new data, and provides links to resources and tools for metadata creation and validation.

6.1. Does metadata comply with EDMC Data Documentation directive?

No

6.1.1. If metadata are non-existent or non-compliant, please explain:

Missing/invalid information:
- 1.6. Type(s) of data
- 1.7. Data collection method(s)
- 3.1. Responsible Party for Data Management
- 4.1. Have resources for management of these data been identified?
- 4.2. Approximate percentage of the budget for these data devoted to data management
- 5.2. Quality control procedures employed
- 7.1. Do these data comply with the Data Access directive?
- 7.1.1. If data are not available or has limitations, has a Waiver been filed?
- 7.1.2. If there are limitations to data access, describe how data are protected
- 7.3. Data access methods or services offered
- 7.4. Approximate delay between data collection and dissemination
- 8.1. Actual or planned long-term data archive location
- 8.3. Approximate delay between data collection and submission to an archive facility
- 8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?

6.2. Name of organization or facility providing metadata hosting:

NMFS Office of Science and Technology

6.2.1. If service is needed for metadata hosting, please indicate:

6.3. URL of metadata folder or data catalog, if known:

https://www.fisheries.noaa.gov/inport/item/49593

6.4. Process for producing and maintaining metadata

(describe or provide URL of description):

Metadata produced and maintained in accordance with the NOAA Data Documentation Procedural Directive: https://nosc.noaa.gov/EDMC/DAARWG/docs/EDMC_PD-Data_Documentation_v1.pdf

7. Data Access

NAO 212-15 states that access to environmental data may only be restricted when distribution is

explicitly limited by law, regulation, policy (such as those applicable to personally identifiable information or protected critical infrastructure information or proprietary trade information) or by security requirements. The EDMC Data Access Procedural Directive contains specific guidance, recommends the use of open-standard, interoperable, non-proprietary web services, provides information about resources and tools to enable data access, and includes a Waiver to be submitted to justify any approach other than full, unrestricted public access.

7.1. Do these data comply with the Data Access directive?

7.1.1. If the data are not to be made available to the public at all, or with limitations, has a Waiver (Appendix A of Data Access directive) been filed?

7.1.2. If there are limitations to public data access, describe how data are protected from unauthorized access or disclosure:

7.2. Name of organization of facility providing data access:
NOAA Office for Coastal Management (NOAA/OCM)

7.2.1. If data hosting service is needed, please indicate:

7.2.2. URL of data access service, if known:

7.3. Data access methods or services offered:

7.4. Approximate delay between data collection and dissemination:

7.4.1. If delay is longer than latency of automated processing, indicate under what authority data access is delayed:

8. Data Preservation and Protection

The NOAA Procedure for Scientific Records Appraisal and Archive Approval describes how to identify, appraise and decide what scientific records are to be preserved in a NOAA archive.

8.1. Actual or planned long-term data archive location:
(Specify NCEI-MD, NCEI-CO, NCEI-NC, NCEI-MS, World Data Center (WDC) facility, Other, To Be Determined, Unable to Archive, or No Archiving Intended)

8.1.1. If World Data Center or Other, specify:

8.1.2. If To Be Determined, Unable to Archive or No Archiving Intended, explain:

8.2. Data storage facility prior to being sent to an archive facility (if any):
Office for Coastal Management - Charleston, SC

8.3. Approximate delay between data collection and submission to an archive facility:

8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?
Discuss data back-up, disaster recovery/contingency planning, and off-site data storage relevant to the data collection

9. Additional Line Office or Staff Office Questions
Line and Staff Offices may extend this template by inserting additional questions in this section.